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North American ISDN Users' Forum
Private Switching Working Group
BRI Terminal Working Group

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TITLE: Analysis of NIUF Input on National ISDN BRI Trunk

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ABSTRACT: This contribution gives an overview of previous industry activities on the proposed National ISDN BRI trunk feature, a summary of the results of a CPE vendor survey on BRI trunking, and a description of the services and other capabilities needed for the initial implementation of BRI trunk, and for enhancements to this feature.

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DATE: September 3, 1996

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DISTRIBUTION: NIUF participants and others interested in BRI trunk

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NOTICE: This contribution has been prepared to assist the NIUF. This proposal is made by Cortelco International Inc. as a basis of discussion. This contribution should not be construed as a binding proposal on Cortelco International Inc. Specifically, Cortelco International Inc. reserves the right to request amendments or modifications to the proposal in the future.

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1 Introduction

"BRI trunking" is a proposed National ISDN enhancement. This document gives an overview of previous industry activities on this feature, a summary of the results of a CPE vendor survey on BRI trunking, and a description, based on the survey results and previous input of the services and other capabilities needed for the initial implementation of BRI trunk, and for ongoing enhancements to this feature.

The BRI trunk feature is a set of services and other capabilities intended to facilitate connection of one or more basic rate interfaces to a single intelligent, autonomous CPE device. Examples of such equipment include PBXs, key systems, videoconferencing systems and message storage and retrieval (voicemail) systems.

If multiple BRIs are connected to the same customer equipment as part of the BRI trunk feature, these interfaces are treated as a group by the network and the CPE.

The single piece of CPE processes all calls and service requests on all interfaces and may provide switching and interworking functions. The network has no knowledge of any underlying terminal configuration.

This is different from the model for the current National ISDN BRI, which assumes the network has knowledge of and communicates with multiple user-interactive terminals on a single BRI. Implementation of the BRI trunk feature will simplify provisioning of services and CPE supplier implementation for complex multi-purpose customer premise equipment.

2 Background

In 1994, the NIUF approved the implementation agreement "Signaling/Supplementary Services Working Group BRI Class II" (432-94). This agreement described one approach to implementing BRI trunk capabilities.

The NIUF began work in 1996 to determine a set of BRI trunk capabilities that could be implemented in a relatively short timeframe.

During the NIUF interim versions meeting held on April 17, 1996 in New York City, there was substantial interest to progress the work on BRI Trunk. Many CPE suppliers presented their applications and needs for the BRI Trunk capability.

Subsequent to the Versions meeting, three activities took place to further define the needs for the BRI trunk feature:

- Bellcore produced an analysis of the BRI trunk feature, which provided recommendations for capabilities and services to be included in the feature, as well as identifying open issues that

required further study. Bellcore worked with the feature co-champions, Stentor and Bell Atlantic, and had several interactions with the CO switch suppliers while producing the contribution.

This contribution was presented at the June NIUF.

- Based on the contents of the presentations made at the Versions interim meeting, Pete Melton (Private Switching Working Group Chair) developed a working document intended to represent the consensus of the CPE supplier community on key aspects of this feature, as expressed in the NIUF.

  This document was circulated prior to the June NIUF. The document was updated to reflect comments received and the revised version presented at the June NIUF. Additional comments were incorporated after a conference call on July 20th.

- A CPE supplier survey was distributed at the June NIUF in order to prioritize capabilities and services for inclusion in the BRI trunk feature, and also provide input on some general questions.

The current document is intended to combine the output of these three activities and provide a full industry view of the needs for the BRI trunk feature.

3 CPE Supplier Survey Summary

The intent of the CPE supplier survey was to supplement comments previously received and prioritize potential BRI trunk capabilities.

The survey included three general questions on aspects of the proposed feature.

As well, a list of capabilities--which could be potentially made available as part of the BRI trunk feature--were provided, with a brief explanation for each. Suppliers were requested to check off features they viewed as necessary or desirable for their applications, and to list up to ten capabilities in priority order, indicating which priority capabilities were viewed as essential for inclusion in the initial BRI trunk offering.

The full text of the survey form, including a description of each capability, is included as an appendix to this document.

3.1 Company Information

The following six companies returned surveys. These vendors represent at least 67 percent of the market for PBX systems, according to Eastern Management Group (June 12, 1996). These six

vendors have taken the initiative to put forth this set of recommendations regarding the near-term implementation of BRI trunk.

The list indicates what type of CPE each response represents.

1. Lucent Technologies
   PBXs, key systems, video conferencing equipment, other terminals

2. Siemens Rolm
   Voice and Data Telecommunications Equipment

3. Jetstream Communications
   "digital communications managers" (multifunction controllers for home and home office applications)

4. Nortel Multimedia Communication Systems
   Meridian 1 PBX

5. Eicon Technology
   ISDN PC cards -- Remote Network Access, PBX, video-conferencing

6. Cortelco International
   Millennium PBX

3.2 General Questions

This section lists the three general questions asked as part of the survey and the responses from each company. Where appropriate, the company's comments provided with the responses are included.

1. What is the estimated maximum number of BRIs per interface group needed for your application? (An interface group is a set of BRIs terminating to the same customer premises and treated as a unit for hunting incoming calls and certain features.)

Cortelco: 12

Eicon: 8

Jetstream: 4 (for vendor's applications, estimated breakdown would be 1:40%, 2:30%, 3:20%, 4:10%)

Lucent: 5-8 (supplier indicated tariff difference between BRI and PRI tend to encourage BRI)

Nortel: 12

Siemens Rolm: 3 (current offering)
supplier indicated that in general terms, requirement number would be 20 to 50% of supported stations, based on industry standard traffic rules for key and hybrid systems

2. What is the estimated maximum number of directory numbers needed for your application?

Cortelco: 400-500

Eicon: 10

Jetstream: 32 (less than 10 would be typical; vendor indicated DNs should not be required to be contiguous)

Lucent: 10-15 (One DN per B-channel maximum)

Nortel: 48-4800

Siemens Rolm: 24 (current configuration); 64 (maximum)

Note: Bellcore GR-199 currently limits the number of directory numbers per basic rate interface to 128. The two vendors (Nortel and Cortelco) who responded with numbers higher than 128 stated on the August 5, 1996 conference call that 128 DNs would be acceptable in the initial implementation.

3. What is your estimate of the number of new lines the BRI trunk feature might generate in the first three years of its availability?

Note: The original question did not indicate whether the number of lines indicated represented total lines over all applications, lines for a single application or for a single product line. Also, the question did not indicate whether it applied to the U.S. market or both the U.S. and Canadian markets. Clarifications were requested of the suppliers on these points.

Cortelco: 15,000 (U.S. and Canadian markets, their product only)

Eicon: 50,000 (scope of estimate unknown)

Jetstream: 250,000 (U.S. only, their products only)

Lucent: 2-3 million (entire North American market)
supplier indicated they expected the small business community and Internet access for the residential market would generate huge demand

Nortel: 45,000-50,000 (U.S and Canadian markets, their product only)
first year 10-12.5K, second year 15-17.5K, third year 20-22.5K

Siemens Rolm: 10 million (entire North American small-office home-office or SOHO market)

3.3 Feature List

This section lists the features on the checklist and indicates the suppliers who selected each.

1. Point-to-point-interface
   Cortelco, Eicon, Jetstream, Nortel

2. Non-initializing (SPID-free) customer equipment
   Cortelco, Eicon, Jetstream, Lucent, Nortel, Siemens Rolm

3. Single TEI
   Cortelco, Eicon, Jetstream, Lucent, Nortel

4. Non-facility associated signalling (NFAS) including D-channel backup
   Jetstream

5. combined PRI/BRI interface groups
   Nortel

6. circuit-mode unrestricted (2 x 64 kbps) bearer capability
   Cortelco, Eicon, Lucent, Nortel, Siemens Rolm

7. circuit-mode unrestricted (n x 64 kbps, n > 2) bearer capability
   Lucent, Siemens Rolm

8. packet-mode (D-channel) bearer capability
   Eicon, Jetstream, Siemens Rolm

9. packet-mode (B-channel) bearer capability
   Eicon, Siemens Rolm

10. channel connection before answer for incoming calls (early cut-through)
    Cortelco, Lucent, Nortel, Siemens Rolm

11. inclusion of progress indicators in SETUP and CONNECT messages
    Nortel, Siemens Rolm

12. channel negotiation
    Eicon, Lucent, Siemens Rolm

13. direct inward dialling (DID)/direct outward dialling (DOD)
    Cortelco, Jetstream, Lucent, Nortel, Siemens Rolm

14. additional trunk types
    Cortelco, Nortel, Siemens Rolm

15. call-by-call service selection
    Cortelco, Nortel, Siemens Rolm

16. parameter downloading
    Eicon, Jetstream, Siemens Rolm

17. RESTart initiated by the network
    Cortelco, Nortel, Siemens Rolm

18. RESTart initiated by the user
    Cortelco, Nortel, Siemens Rolm

19. STATus ENQuiry initiated by the user
    Cortelco, Lucent, Nortel, Siemens Rolm

20. B-channel availability control
    Cortelco, Nortel, Siemens Rolm

21. call hold
    Jetstream, Lucent, Siemens Rolm

22. additional call offering
    Jetstream, Siemens Rolm

23. name delivery
    Cortelco, Jetstream, Nortel, Siemens Rolm

24. automatic callback
    Siemens Rolm

25. flexible calling
    Jetstream, Siemens Rolm

26. call forwarding

Siemens Rolm

28. call deflection
    Cortelco, Jetstream, Siemens Rolm

29. two B-channel transfer
    Cortelco, Jetstream, Lucent, Nortel, Siemens Rolm

30. overlap sending
    Jetstream, Siemens Rolm

31. calling number identification services
    Cortelco, Jetstream, Lucent, Nortel, Siemens Rolm

33.1 CPE control of network-provided tones (see section 5.1 for description)
    Jetstream

33.2 channel hunting
    Cortelco, Lucent, Nortel

    Note 1: Nortel included an additional feature "Trunk Groups = Multiple DSLs", which was interpreted to be equivalent to channel hunting.

    Note 2: Lucent checked off call forwarding with the note "IS THIS MULTI-LINE HUNT GROUP?". The item was included in the priority list with a note indicating it was assumed this was multi-line hunt group. This was interpreted to mean channel hunting rather than the existing BRI call forwarding feature.

33.3 Multiple NXX (DID Blocks)
    Nortel

3.4 Essential Priority Items

This section lists the features that were included as essential capabilities in at least one vendor's priority list. This information will be used in subsequent sections to prioritize items for inclusion in the BRI trunk feature.

1. Point-to-point interface
    Nortel

2. Non-Initializing Terminal
    Eicon, Lucent, Nortel

3. Single TEI
   Nortel

6. 2 x 64
   Lucent

12. Channel negotiation
   Lucent

13. DID/DOD
   Cortelco, Jetstream, Nortel

15. call-by-call service selection
   Nortel

21. call hold
   Lucent

22. additional call offering
   Jetstream, Lucent

31 calling line identification
   Cortelco, Nortel

33.1 CPE control of network-provided tones
   Jetstream

33.2 channel hunting
   Cortelco, Lucent, Nortel

33.3 multiple NXX
   Nortel

3.5 Priority Items

This section lists items that were included in at least one vendor's priority list, as essential or non-essential. As with the previous section, this information will be used to prioritize items for inclusion in the feature.

1. Point-to-Point Interface
   Cortelco, Eicon, Nortel

2. Non-Initializing Terminal

Cortelco, Eicon, Jetstream, Lucent, Nortel

3. Single TEI
   Cortelco, Eicon, Nortel

6. 2 x 64
   Eicon, Lucent

8. Packet-Mode Data over D
   Eicon, Jetstream

9. Packet-Mode Data over B
   Eicon

10. Early Cut-Through
    Cortelco, Lucent

12. Channel Negotiation
    Eicon, Lucent

14. Additional Trunk Types
    Cortelco, Nortel

16. Parameter Downloading
    Eicon, Jetstream

21. Hold
    Jetstream, Lucent

23. Name Display
    Cortelco, Jetstream, Nortel

25. flexible calling
    Jetstream

28. call deflection
    Cortelco

30. overlap sending
    Jetstream, Lucent

31. calling number identification services
    Cortelco, Jetstream, Lucent, Nortel

4 Near-Term Solution

From the perspective of the telcos and CO switch suppliers, a near-term solution based on modifications to the existing BRI seems to be the most practical choice for BRI trunk, since it is a simpler solution for implementation on the switch side and accommodates many of the CPE supplier needs.

The following sections describe capabilities and services that should be included in the initial BRI trunk offering. They include survey items which at least three CPE suppliers have listed as essential priority items, which are deemed essential for the initial implementation. A list of desirable items, for which at least three vendors on the survey have listed as priority items, is also included in this section.

4.1 Essential Items

4.1.1 Bearer Capabilities

Based on presentations made at the April Versions meeting, BRI Trunk should initially support the following minimal set of bearer capabilities:

- Circuit-Mode Speech
- Circuit-Mode 3.1 kHz audio
- Circuit-Mode Unrestricted Digital Information (64 kbps)
- Circuit-Mode Unrestricted Digital Information (64 kbps rate-adapted from 56 kbps)

4.1.2 Channel Hunting/DID/DOD

CPE supplier input has consistently identified channel hunting as a key capability for the initial BRI trunk feature. Incoming and outgoing calls should be able to hunt to any channel in the entire group, allowing multiple calls associated with any individual DN.

This capability will be used to implement direct inward dialling (DID) and direct outward dialling (DOD), which has been identified as an important need in ongoing CPE supplier interactions. DID and DOD allow for the pooling of DNs across multiple BRIs. DID allows an incoming call to be offered on any available interface while still being directed to a specific station (DN). DOD allows a user to dial outward from any station and have the CPE originate the call on any available interface and include the station identifier (DN) with the call.

The channel hunting capability should locate an interface with an available B-channel before any messages (e.g. SETUP) are sent. The hunting should be done in such a manner that collisions are reduced (e.g., the CPE and switch should start at opposite ends of the available channels.)

4.1.3 No SPIDs

Previous CPE vendor interactions indicated that removing the requirement for SPID entry and initialization is important; this was confirmed by the survey results. Therefore, CPE should not be required to initialize as part of the near-term solution for BRI trunk.

4.2 Desirable Items (High-Priority)

These are items which at least three vendors have indicated are priority items (essential or not).

Based on the level of interest, it is not a requirement that these capabilities be implemented for the near-term solution, but it would be desirable to include them if possible.

These capabilities are only under consideration for inclusion in the initial solution. Further evaluation is needed to determine if they can be included based on implementation difficulty on the switch side.

4.2.1 Point-to-Point Interface

This implies that SETUP messages are sent from the switch on a point-to-point rather than a broadcast data link at layer 2, and also has some implications for layer 3 signalling. One key point is that actions on receipt of a clearing message from the user during call establishment are different.

If a SETUP message is sent on a point-to-point data link, and the customer premise equipment clears the call while it is still being established, the network will initiate call clearing (or other appropriate treatment) to the calling user immediately.

If a SETUP message is sent on a broadcast data link in this scenario, the network will wait until the appropriate timer has expired before providing appropriate treatment to the calling user. This is to give all users on a multipoint interface a chance to respond to the call offering.

4.2.2 Single TEI

A single TEI value should be allowed to use both B-channels at the same time for any combination of supported call types. A fixed TEI value in the range 0 to 63 should be allowed; dynamic TEI assignment should also be available.

4.2.3 Calling Number Identification Services

This feature can be provided by the switch using the calling party number information element.

4.2.4 Calling Name Identification Services

This feature can by provided by the switch when it is available for regular BRI, as it is not currently available on all switches.

Two methods are available for delivering calling name, display text (as on BRI) and common element procedures (as on PRI). Two vendors responding to the survey (Cortelco and Nortel) expressed a preference for common element procedures, one vendor (Siemens Rolm) preferred display text procedures and a fourth (Jetstream) had no preference.

Note: A near-term solution which sends name information in the display text information element would be sufficient for those vendors who preferred common element procedures.

5 Long-Term Solution

A potential longer-term solution to BRI trunk would build on the initial implementation by providing additional capabilities and services.

Several CPE vendors in previous interactions have indicated that service invocation using functional signalling should be the evolutionary goal for BRI trunk. This type of service invocation allows for the implementation of more powerful and flexible services and is better suited for use by intelligent CPE than stimulus procedures.

The following sections identify additional features that could be potentially implemented in a second phase of BRI trunk, based on the fact that at least one vendor included them in their priority list, and also prioritized by the number of vendors who checked them off on their survey form. These features should be considered in addition to desirable items listed above that do not make it in the initial implementation.

5.1 Desirable Items

The following items were listed by at least one vendor in their priority list. Items marked with an asterisk were viewed as essential by at least one vendor.

- circuit-mode unrestricted digital information (2 x 64) kbps bearer capability*
- channel negotiation*
- call-by-call service selection*
- call hold*
- additional call offering*
- CPE control of network-provided tones*

  This capability was included in the Jetstream survey response, with the following description:

  > "The CPE needs to be able to cause the network to return busy tone after the call has been presented on the interface and the CPE has determined that the appropriate destination is busy. This is currently required by TR268, but at least two switch manufacturers ignore the requirement in their current BRI implementations."

- multiple NXX (DID blocks)*
  DID blocks should be allowed to span more than one NXX (Nortel)
- packet-mode unrestricted digital information (over D and B)
- early cut-through
- additional trunk types
- parameter downloading
- flexible calling
- call deflection
- overlap sending

5.2 Items Identified by Five Vendors

This item was identified as desirable by five vendors, but no vendor included it in their priority list.

- two b-channel transfer

5.3 Items Identified by Three Vendors

These items were identified as desirable by three vendors, but no vendor included them in their priority list.

- RESTart initiated by the network
- RESTart initiated by the user
- STATus ENQuiry initiated by the user
- B-channel availability control

5.4 Items Identified by Two Vendors

These items were identified as desirable by two vendors, but no vendor included them in their priority list.

- circuit-mode unrestricted (n x 64 kbps, n > 2) bearer capability
- inclusion of progress indicators in SETUP and CONNect messages.

Appendix BRI Trunk Survey Form

This appendix contains the BRI trunk survey form that was distributed to CPE suppliers.

National ISDN BRI Trunk Feature
CPE Supplier Survey
North American ISDN Users' Forum
Revised Version, June 11, 1996

Background and Instructions for Survey Completion:

1. This survey is intended for completion by **CPE suppliers**.

2. The intent of the survey is to supplement comments previously received and prioritize potential BRI trunk features on which agreement has not been achieved among CPE suppliers and other interested parties within the NIUF.

3. Three general questions are included on aspects of the proposed feature.

4. A list of features--which could be potentially made available on a basic rate trunk interface--is provided, with a brief explanation for each. Note: the features are **not** listed in order of priority.

5. Place a check mark in the feature list beside each feature you view as necessary or desirable for your application(s). If a capability you need is not listed, provide a brief description in the space provided.

6. Determine up to 10 capabilities which are most important for your application(s) and list the numbers for those capabilities in the priority list at the end of the survey, in order of importance to you.

7. Draw a line at the point in the priority list which separates the capabilities you feel are **absolutely essential** for the initial BRI trunk offering, and those which may be left as future enhancements. Label this line with the word "ESSENTIAL".

   Please keep the list of essential capabilities to an absolute minimum.

8. A copy of this survey is also being distributed via e-mail to allow electronic responses. If you have not received a copy, you can request one by sending e-mail to melton@cortelco.com.

Please submit the survey response and any additional comments by close of business on Friday June 28th, 1996, by one of the following methods:

a. e-mail (preferred) to melton@cortelco.com

b. fax to (901) 365-3762

c. mail to:

Pete Melton
Cortelco International Inc.
4119 Willow Lake Blvd.
Memphis TN 38118

9. Any questions on the survey content should be directed to Pete Melton at (901) 365-7774, extension 360 or melton@cortelco.com.

NIUF BRI Trunk
CPE Supplier Survey
North American ISDN Users Forum (NIUF)

Your Name: _____

Company Name: _____

Telephone Number: _____

FAX Number: _____

E-mail Address: _____

Does this response represent:

[ ] a unified corporate view

[ ] the view of personnel representing an individual product or product line

Please list the product type(s) to which your responses apply (e.g PBX, key system, videoconferencing equipment/video gateway) :

_____

_____

_____

General Questions

1. What is the estimated maximum number of BRIs per interface group needed for your application? (An interface group is a set of BRIs terminating to the same customer premises and treated as a unit for hunting incoming calls and certain features.)

   If you cannot determine a maximum number, please list the factors that would influence the maximum number of BRIs need for your application.

   [ ]

   Comments: _____

   _____

   _____

2. What is the estimated maximum number of directory numbers needed for your application?

   If you cannot determine a maximum number, please list the factors that would influence the maximum number of DNs that would be needed for your application.

   [ ]

   Comments: _____

   _____

   _____

3. What is your estimate of the number of new lines the BRI trunk feature might generate within the first three years of its availability?

   [ ]

   Comments: _____

   _____

   _____

Feature List

1. Point-to-point interface [ ]

   This implies that SETUP messages are sent from the CO switch on a point-to-point rather than a broadcast data link, and also has some implications for layer 3 signalling.

   Please indicate the aspects of a point-to-point interface that are important for your application:

   [ ] Delivery of a SETUP message on a broadcast data link as opposed to a point-to-point link

   [ ] Actions on receipt of a clearing message from the user during call establishment: if a SETUP message is sent on a point-to-point data link, the network will initiate call clearing (or other appropriate treatment) to the calling user immediately.

   If a SETUP message is sent on a broadcast data link, the network will wait until the appropriate timer has expired before providing the appropriate treatment to the calling user. This is to give all users on a multipoint interface a chance to respond to the call offering.

   Note 1: Channel negotiation is also allowed in a point-to-point configuration; this capability is listed as a separate feature, number 12.

   Note 2: The user in a point-to-point configuration is also allowed to cut through the B-channel on an incoming call before receiving a CONNect ACKnowledge message from the network. This is covered in item #10, early cut-through.

2. Non-initializing (SPID-free) customer equipment [ ]

3. Single TEI [ ]

4. Non-facility associated signalling (NFAS) including D-channel backup [ ]

   This is capability currently available on PRI that allows a D-channel on one interface to provide signalling for B-channels on multiple associated interfaces. D-channel backup, a related capability, provides for a standby D-channel that can take over signalling duties if the interface containing the primary D-channel fails.

This is one mechanism of providing channel negotiation over multiple interfaces, as well as some supplementary services (e.g. two B-channel transfer) which may require manipulation of calls on more than one BRI.

5. Combined PRI/BRI interface groups [ ]

   This capability allows PRIs and BRIs to be included as part of the same line group, for example to add additional channels to an existing PRI access by adding one or more BRIs instead of another PRI. This implies, for example, that the same DNs could be used for incoming and outgoing calls on the associated PRIs and BRIs.

6. circuit-mode unrestricted (2 x 64 kbps) bearer capability
   [ ]

   Use of this bearer capability allows both channels on an interface to be used for a single call, with the channels being synchronized through the public network.

7. circuit-mode unrestricted (n x 64 kbps, n > 2) bearer capability [ ]

   This is the same as item #5, except it allows more than two B-channels and does not restrict the channels to the same interface.

8. packet-mode (D-channel) bearer capability [ ]

9. packet-mode (B-channel) bearer capability [ ]

10. channel connection before answer for incoming calls (early cut-through) [ ]

    This is a capability currently available on PRI for incoming voice and voice-band data calls, which allows connection of the speech path before answer in the backwards direction, based on inclusion of the appropriate progress indicator in an ALERTing or PROGress message.

    Indicate the applications you **require** this capability for:

    [ ] CPE-provided ringback (audible ring) tone (progress indicator #8 in an ALERTing message)

    [ ] tandem calls routed to non-ISDN facilities (progress indicator #1 in a PROGress message)

    [ ] CPE-provided tones and/or announcements (progress indicator #8 in an PROGress message)

11. inclusion of progress indicators in SETUP and CONNECT messages [ ]

This capability allows the CPE to include the following progress indicators in a SETUP message: #1 (call is not end-to-end ISDN), indicating a tandem call from a non-ISDN facility, or #3 (origination address is non-ISDN), indicating the that the calling equipment is non-ISDN. Additionally, the CPE may include progress indicator #2, destination address is non-ISDN, if the equipment which answers the call is non-ISDN.

12. channel negotiation [ ]

This capability allows the CPE to request an alternative B-channel be used for an incoming call.

13. direct inward dialling (DID)/direct outward dialling (DOD)

These capabilities allow incoming and outgoing calls for a given DN to be offered on either B-channel of any interface associated with the customer access.

14. additional trunk types (e.g. tie line, FX, INWATS, OUTWATS)
[ ]

This capability allows individual channels on the interface group to be dedicated to additional service types such as those described in the heading. These are in addition to the "local" and DID/DOD trunk types that industry consensus appears to indicate should be in the initial BRI trunk implementation.

15. call-by-call service selection [ ]

This feature, currently available on PRI, allows a B-channel to be allocated to multiple services (such as those described in item 12), on a per-call basis. This capability uses the network-specific facilities information element to indicate the desired service, and can be using for incoming or outgoing calls.

16. parameter downloading [ ]

This capability, available on National ISDN BRI, allows the CPE to request a download of relevant information contained in the terminal service profile. This information includes:

- directory numbers and bearer capabilities assigned to the terminal
- call appearance, feature activator and indicator assignments, and text descriptions for each feature

A terminal must initialize to have access to parameter downloading.

17. REStart initiated by the network [ ]

This capability, currently available on National ISDN PRI, allows the network to return a channel or interface to the idle state regardless of the status of any call(s) on the channel or interface.

18. RESTart initiated by the user [ ]

This capability, currently available on National ISDN PRI, allows the user to return a channel or interface to the idle state regardless of the state of any call(s) on the channel or interface.

19. STATus ENQuiry initiated by the user [ ]

This capability, currently available on National ISDN PRI, allows the user to ask the network for the current state of a call.

20. B-channel availability control [ ]

This is a proposed National ISDN PRI capability which allows the user or network to indicate that an individual B-channel has been taken out of service, and is unavailable for incoming calls, and to indicate that the channel is back in service.

21. call hold [ ]

This feature, currently available on BRI, allows the user to disconnect a call from a B-channel, freeing that channel for use with another call, and retrieve the original call at a later time.

22. additional call offering [ ]

This feature, currently available on National ISDN BRI, allows a call to be offered to the user when all B-channels are busy. The user may clear or hold a call to accept the new one.

23. name delivery [ ]

This feature would allow calling and redirecting party names to be delivered to the CPE.

preferred name delivery method

[ ] display text information element (as NI BRI)

[ ] common element procedures (as NI-1996 PRI)

[ ] no preference

24. automatic callback [ ]

This feature, currently available on National ISDN BRI, allows the user to request a callback when a busy or no answer condition is encountered on an incoming call.

The current feature uses feature key management.

25. flexible calling [ ]

This feature, currently available on National ISDN BRI, provides conference and transfer using feature key management.

26. call forwarding [ ]

This set of features, currently available on BRI, allows calls to be redirected to another number, either based on a busy or no answer condition, or unconditionally when activated by the user.

The current feature uses feature key management or dial access.

27. message waiting indicator [ ]

This capability allows the network to request activation or deactivation of a message waiting indicator on a terminal at the customer premises.

The current BRI feature uses feature key management.

28. call deflection [ ]

This capability, proposed for National ISDN PRI, allows the CPE to request that an incoming call (answered or unanswered) be dynamically redirected to another location. This feature uses functional signalling.

29. two B-channel transfer [ ]

This capability, proposed for National ISDN PRI, allows the CPE to request that two calls on the customer access (one of which must be answered) be merged at the CO switch, freeing the two B-channels for additional calls. This feature uses functional signalling.

[ ] Does your application require the ability to transfer calls using B-channels on two separate BRIs?

30. overlap sending [ ]

This capability, available on National ISDN BRI, allows the user to send incomplete or no called party address information in a SETUP message, and subsequently send address information in one or more INFOrmation messages.

31. calling number identification services [ ]

This service allows the network to provide calling and redirecting party number information to the user.

32. network-provided displays

This service, available on National ISDN BRI, allows the network to send display information to the user. The primary application of this feature is to display the network-generated text to the end-user of an ISDN terminal.

This feature uses the American national standard display text information. The display information is sent as ASCII text, with embedded tags indicating the significance of the display text contained in the information element.

33. List other services and capabilities, numbering them starting at 33 (for inclusion in the priority list), and include a brief description for each.

Priority List

Rank ***Feature #***

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____